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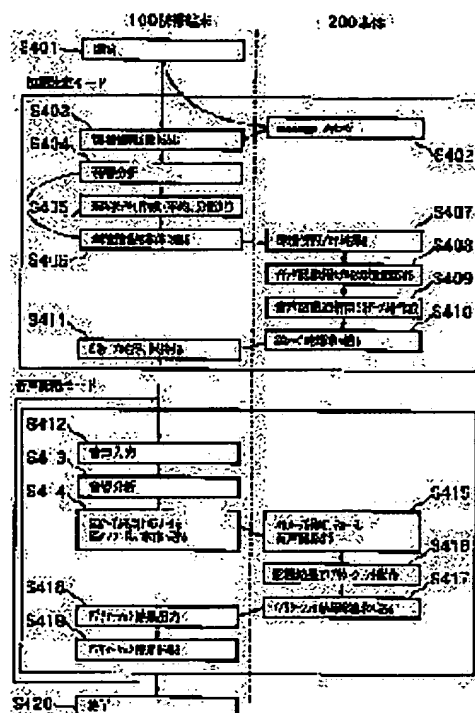
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(54) VOICE INPUT TERMINAL, VOICE RECOGNITION DEVICE, VOICE COMMUNICATION SYSTEM AND VOICE COMMUNICATION METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a voice input terminal, that can attain optimum voice recognition or communication based on a circumstance with respect to the voice input terminal and to provide a voice recognition device, a voice communication system and a voice communication method.

SOLUTION: Environmental information (e.g. noise characteristics and talker characteristics) of a portable terminal 100 is fetched in a step S403 in an initial mode and the information is sent to a main body 200 (step S406). The main body 200 decides a data conversion condition at voice recognition or communication on the basis of the environment (steps S408 and S409) and uses the condition for succeeding communication of voice data.



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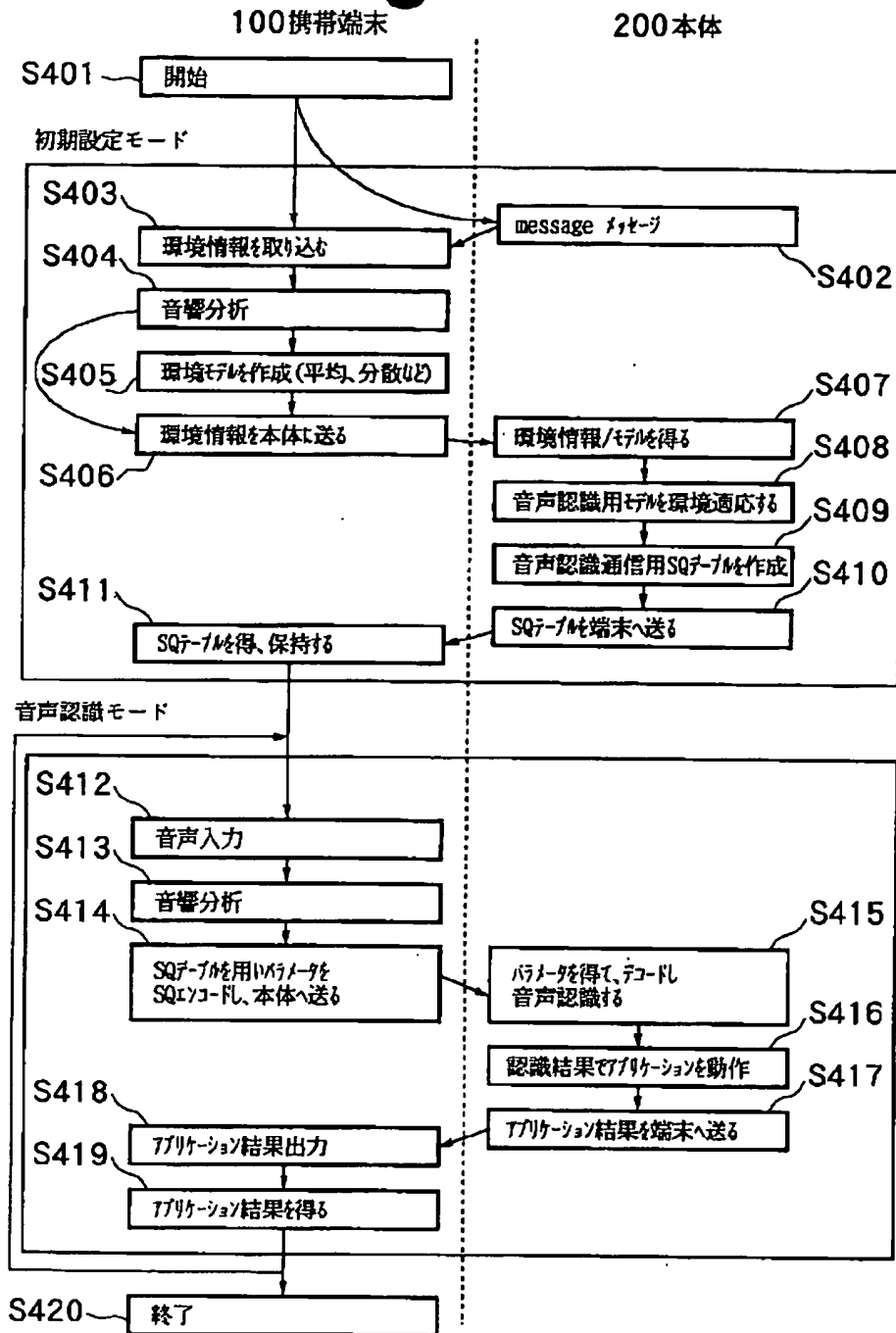
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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing having shown the block diagram of the voice communication system concerning 1 operation gestalt of this invention.

[Drawing 2] It is the flow chart of processing of the voice communication system concerning 1 operation gestalt of this invention.

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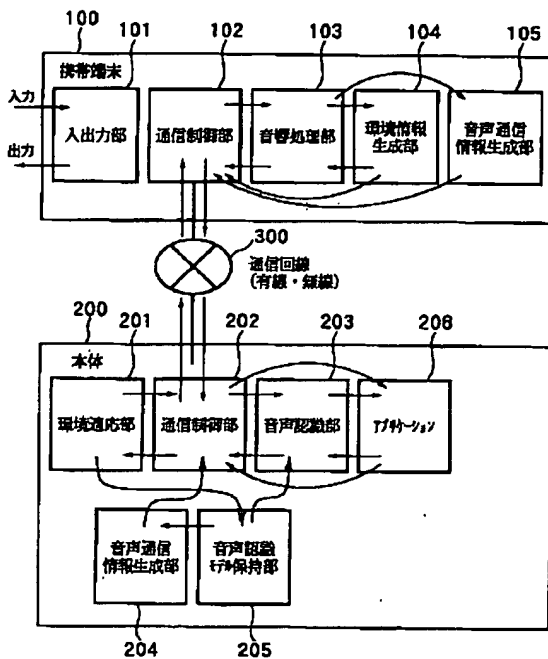
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DRAWINGS

[Drawing 1]



[Drawing 2]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] Through a communication network, this invention transmits voice data and relates to the voice input terminal machine, the voice recognition unit, voice communication system, and the speech-communication method for performing the speech recognition.

[0002]

[Description of the Prior Art] From voice input terminal machines, such as a cellular phone, voice data is sent out to a host server through a communication network, and the voice communication system which performs processing which pulls out specific information is proposed. In the starting voice communication system, with voice, since transmission and reception of data are possible, there is an advantage that operation is easy.

[0003]

[Problem(s) to be Solved by the Invention] However, according to a property, its circumference environment, etc. of the voice input terminal machine itself, such as a cellular phone, voice data may be changed and sufficient speech recognition may not be able to be performed.

[0004] Moreover, in order to communicate according to the same communication conditions in any cases, communication efficiency was not necessarily able to say that it was good.

[0005] Therefore, the purpose of this invention is to offer the voice input terminal machine which can attain the optimal speech recognition or optimal communication, a voice recognition unit, a voice communication system, and the speech-communication method based on the situation about a voice input terminal machine.

[0006]

[Means for Solving the Problem] According to this invention, it is the voice input terminal machine which transmits voice data to a voice recognition unit through the communication network of a cable or radio, and the voice input terminal machine characterized by having an audio input means, a means to create the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation, and the means of communications that transmits the information concerned to the aforementioned voice recognition unit is offered.

[0007] In this invention, the aforementioned information is the peculiar information in connection with the aforementioned voice input terminal machine, or information on the use situation in connection with the circumference environment used or the user itself, for example, the environmental information of the circumference where these voice input terminal machines, such as the property of the function of the aforementioned voice input terminal machine itself, such as the property of the microphone for voice input, and a surrounding noise property, are used, or the speaker property of the speaker using the voice input terminal machine is included. Moreover, what performed acoustic-analysis processing etc. to the former data of the information concerned acquired for example, from the aforementioned input means is contained in this information.

[0008] In the voice input terminal machine of this invention, when the data-conversion conditions for the communication based on the aforementioned information are received from the aforementioned voice recognition unit, it can also have a means to change the aforementioned voice data based on the conversion conditions concerned.

[0009] Moreover, in the voice input terminal machine of this invention, a means to save the aforementioned information, a means to judge whether the aforementioned information had change at the time of each communication, and when there is no change in the aforementioned information, it can also have a means to notify that to the aforementioned voice recognition unit.

[0010] Moreover, in the voice input terminal machine of this invention, based on the aforementioned information, it can have a means to create a speech recognition model, and the aforementioned means of communications can also transmit the aforementioned information and/or the speech recognition model concerned to the aforementioned voice recognition unit.

[0011] Moreover, according to this invention, it is the voice recognition unit which performs speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of a cable or radio, and when the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation is received from the aforementioned voice input terminal machine, the voice recognition unit characterized by having a means to perform speech recognition processing based on the information concerned is offered.

[0012] Moreover, it is the voice recognition unit which performs speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of a cable or radio according to this invention, and

the voice recognition unit characterized by to have a means to create the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation, and a means perform speech recognition processing based on the information concerned, based on the transmitted voice data is offered.

[0013] In the voice recognition unit of this invention, it can also have a means to create a speech recognition model based on the aforementioned information.

[0014] Moreover, according to this invention, it is the voice recognition unit which performs speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of a cable or radio. A means to determine the data-conversion conditions for communication based on the aforementioned information when the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation is received from the aforementioned voice input terminal machine, The voice recognition unit characterized by having a means to send out the data-conversion conditions concerned to the aforementioned voice input terminal machine is offered.

[0015] Moreover, according to this invention, it is the voice recognition unit which performs speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of a cable or radio. A means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation based on the transmitted voice data, The voice recognition unit characterized by having a means to determine the data-conversion conditions for communication, and a means to send out the data-conversion conditions concerned to the aforementioned voice input terminal machine, based on the aforementioned information is offered.

[0016] In the voice recognition unit of this invention, the aforementioned data-conversion conditions can also include the data-conversion conditions based on the quantization table created based on the aforementioned information.

[0017] Moreover, in the voice recognition unit of this invention, when the aforementioned voice input terminal machine is plurality, it can also have a means to save the aforementioned information, for every aforementioned voice input terminal machine.

[0018] Moreover, in the voice recognition unit of this invention, when the aforementioned voice input terminal machine is plurality, it can also have a means to save the aforementioned speech recognition model, for every aforementioned voice input terminal machine.

[0019] Moreover, in the voice recognition unit of this invention, when the aforementioned voice input terminal machine is plurality, it can also have a means to save the aforementioned data-conversion conditions, for every aforementioned voice input terminal machine.

[0020] According to this invention, it is the voice communication system which consists of a voice input terminal machine which can communicate, and a voice recognition unit through the communication network of a cable or radio. moreover, the aforementioned voice input terminal machine A voice input means and a means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation, It has the means of communications which transmits the information concerned to the aforementioned voice recognition unit, and the voice communication system characterized by equipping the aforementioned voice recognition unit with a means to perform speech recognition processing based on the aforementioned information is offered.

[0021] Moreover, it is the voice communication system which consists of a voice-input terminal machine which can communicate, and a voice recognition unit through the communication network of a cable or radio, and, according to this invention, the voice communication system characterized by to equip the aforementioned voice recognition unit with a means create the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation, and a means perform speech-recognition processing based on the aforementioned information, based on the voice data from the aforementioned voice-input terminal machine is offered.

[0022] According to this invention, it is the voice communication system which consists of a voice input terminal machine which can communicate, and a voice recognition unit through the communication network of a cable or radio. moreover, the aforementioned voice input terminal machine A voice input means and a means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation, It has the means of communications which transmits the information concerned to the aforementioned voice recognition unit. the aforementioned voice recognition unit The voice communication system characterized by having a means to determine the data-conversion conditions for communication, and a means to transmit the data-conversion conditions concerned to the aforementioned voice input terminal machine, based on the aforementioned information is offered.

[0023] According to this invention, it is the voice communication system which consists of a voice input terminal machine which can communicate, and a voice recognition unit through the communication network of a cable or radio. moreover, the aforementioned voice recognition unit A means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation based on the voice data from the aforementioned voice input terminal machine, The voice communication system characterized by having a means to determine the data-conversion conditions for communication, and a means to transmit the data-conversion conditions concerned to the aforementioned voice input terminal machine, based on the aforementioned information is offered.

[0024] Moreover, according to this invention, through the communication network of a cable or radio, it is the speech-communication method of transmitting voice data to a voice recognition unit from a voice input terminal machine, and the speech-communication method characterized by including the process which creates the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation, and the communication process which transmits the information concerned to the aforementioned voice recognition unit is offered in the aforementioned

voice input terminal machine.

[0025] Moreover, according to this invention, it is the speech-communication method of performing speech-recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of a cable or radio, and when the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation is received from the aforementioned voice input terminal machine, the speech-communication method characterized by to include the process which performs speech recognition processing based on the information concerned is offered.

[0026] Moreover, according to this invention, it is the speech-communication method of performing speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of a cable or radio. The speech-communication method characterized by including the process which creates the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation, and the process which performs speech recognition processing based on the information concerned based on the data transmitted from the aforementioned voice input terminal machine is offered.

[0027] Moreover, according to this invention, it is the speech-communication method of performing speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of a cable or radio. The process which determines the data-conversion conditions for communication based on the information concerned when the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation is received from the aforementioned voice input terminal machine, The speech-communication method characterized by including the process which sends out the data-conversion conditions concerned to the aforementioned voice input terminal machine is offered.

[0028] Moreover, according to this invention, it is the speech-communication method of performing speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of a cable or radio. The process which creates the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation based on the data transmitted from the aforementioned voice input terminal machine, The speech-communication method characterized by including the process which determines the data-conversion conditions for communication based on the information concerned, and the process which sends out the data-conversion conditions concerned to the aforementioned voice input terminal machine is offered.

[0029] Moreover, according to this invention, through the communication network of a cable or radio, are the speech-communication method between the voice input terminal machines and voice recognition units which can communicate, and it sets in the aforementioned voice input terminal vessel. It sets to the aforementioned voice recognition unit including the process which creates the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation, and the communication process which transmits the information concerned to the aforementioned voice recognition unit. The speech-communication method characterized by including the process which performs speech recognition processing based on the aforementioned information is offered.

[0030] Moreover, it is the speech-communication method between the voice-input terminal machines and the voice recognition units which can communicate, and, according to this invention, the speech-communication method characterized by to include the process which creates the information on the aforementioned voice-input terminal machine proper for speech recognition or a use situation, and the process which performs speech-recognition processing based on the aforementioned information is offered based on the voice data from the aforementioned voice-input terminal machine in the aforementioned voice recognition unit through the communication network of a cable or radio.

[0031] Moreover, according to this invention, through the communication network of a cable or radio, are the speech-communication method between the voice input terminal machines and voice recognition units which can communicate, and it sets in the aforementioned voice input terminal vessel. It sets to the aforementioned voice recognition unit including the process which creates the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation, and the communication process which transmits the information concerned to the aforementioned voice recognition unit. The speech-communication method characterized by including the process which determines the data-conversion conditions for communication, and the process which transmits the data-conversion conditions concerned to the aforementioned voice input terminal machine based on the aforementioned information is offered.

[0032] Moreover, according to this invention, through the communication network of a cable or radio, are the speech-communication method between the voice input terminal machines and voice recognition units which can communicate, and it sets to the aforementioned voice recognition unit. The process which creates the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation based on the voice data from the aforementioned voice input terminal machine, The speech-communication method characterized by including the process which determines the data-conversion conditions for communication, and the process which transmits the data-conversion conditions concerned to the aforementioned voice input terminal machine based on the aforementioned information is offered.

[0033] Moreover, according to this invention, in order to transmit voice data to a voice recognition unit from a voice input terminal machine through the communication network of a cable or radio, the storage which recorded the program which considers as a means to create the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation for a computer, and the means of communications which transmits the information concerned to the aforementioned voice recognition unit, and is operated is offered.

[0034] Moreover, according to this invention, in order to perform speech recognition processing about the voice data from a

voice input terminal machine through the communication network of a cable or radio, when the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation is received for a computer from the aforementioned voice input terminal machine, the storage which recorded the program which considers as a means to perform speech recognition processing based on the information concerned, and is operated is offered.

[0035] Moreover, in order to perform speech-recognition processing about the voice data from a voice-input terminal machine through the communication network of a cable or radio, according to this invention, the storage which recorded the program which considers as a means create the information on the aforementioned voice-input terminal machine proper for speech recognition or a use situation, and a means perform speech-recognition processing based on the information concerned, and is operated is offered based on the data transmitted from the aforementioned voice-input terminal machine in the computer.

[0036] Moreover, in order to perform speech recognition processing about the voice data from a voice input terminal machine through the communication network of a cable or radio according to this invention When the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation is received from the aforementioned voice input terminal machine, a computer The storage which recorded the program which considers as a means to determine the data-conversion conditions for communication based on the information concerned, and a means to send out the data-conversion conditions concerned to the aforementioned voice input terminal machine, and is operated is offered.

[0037] Moreover, in order to perform speech recognition processing about the voice data from a voice input terminal machine through the communication network of a cable or radio according to this invention A computer is based on the data transmitted from the aforementioned voice input terminal machine. A means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation, The storage which recorded the program which considers as a means to determine the data-conversion conditions for communication based on the information concerned, and a means to send out the data-conversion conditions concerned to the aforementioned voice input terminal machine, and is operated is offered.

[0038]

[Embodiments of the Invention] Hereafter, the gestalt of suitable operation of this invention is explained with reference to an accompanying drawing.

[0039] Drawing 1 is drawing having shown the block diagram of the voice communication system concerning 1 operation gestalt of this invention.

[0040] the communication line 300 by which a voice communication system connects these with the personal digital assistant 100 as a voice input terminal machine, and the main part 200 as a voice recognition unit possible [communication] -- since -- it becomes

[0041] A personal digital assistant 100 is equipped with the I/O section 101 which outputs and inputs voice, the communications control section 102 which performs communications processing with a main part 200, the acoustical-treatment section 103 which performs an acoustical treatment to the inputted voice, the environmental-information generation section 104 which creates the information on the proper of a personal digital assistant 100, or a use situation (henceforth [this operation gestalt] environmental information), and the speech-communication information generation section 105.

[0042] A main part 200 is equipped with the environmental adaptation section 201 which performs processing based on the environmental information of a personal digital assistant 100, the communications control section 202 which performs communications processing with a personal digital assistant 100, the speech recognition section 203 which performs speech recognition processing to the voice data from a personal digital assistant 100, the speech-communication information generation section 204 which sets up the data-conversion conditions for communication, the speech recognition model attaching part 205, and application 206.

[0043] Next, the operations sequence of the voice communication system which consists of starting composition is explained with reference to drawing 2 . Drawing 2 is the flow chart of processing of a voice communication system.

[0044] the initialization mode to which processing of a voice communication system analyzes environmental information, and the speech recognition mode in which communication of voice data is performed -- since -- it becomes

[0045] Step S401 shows the start of all processings. The information for a processing start is sent to the communications control section 202 of a main part 200 through the communications control section 102 from the I/O section 101.

[0046] At Step S402, a message is alternatively sent to a personal digital assistant 100 from the speech recognition section 203 or application 206. For example, in performing speaker adaptation with a teacher based on environmental information, the list of contents of phonation is sent and it outputs as a message (voice or character) from the I/O section 101 of a personal digital assistant 100. Moreover, when performing microphone adaptation based on environmental information, the purport which has the voice for several seconds uttered may be outputted as a message from the I/O section 101 of a personal digital assistant 100. On the other hand, when performing noise adaptation based on environmental information, this step S402 may be skipped.

[0047] At Step S403, in order to generate environmental information in a personal digital assistant 100, voice data (noise is also included) is incorporated from the I/O section 101.

[0048] In Step S404, acoustic analysis is performed in the acoustical-treatment section 103 about the incorporated voice data. In addition, in changing environmental information into a model (an average, distribution, phoneme model), it sends to the

environmental-information generation section 104. In not making it a model, it sends the result of acoustic analysis to a main part from the communications control section 102. In addition, without carrying out acoustic analysis, voice data may be sent to a direct main part, and analysis etc. may be performed by the main part 200 side.

[0049] When changing environmental information into a model at Step S404, it progresses to Step S405 and environmental information is generated in the environmental-information generation section 104. For example, in aiming at noise adaptation, environmental information detects the non-voice section and generates it by asking for an average and distribution of the section. Moreover, in aiming at microphone adaptation, it generates environmental information by asking for an average and distribution of the voice section. Furthermore, in aiming at speaker adaptation, it creates a phoneme model etc.

[0050] At Step S406, the created model, the acoustic-analysis result, or voice of environmental information is sent out to a main part 200 from the 102 communications control sections.

[0051] At Step S407, the environmental information to which the main part 200 has been sent is received through the communications control section 202.

[0052] Step S408 -- environmental information -- being based -- ** -- environmental adaptation is performed in the environmental adaptation section 201 about the speech recognition model of the speech recognition model attaching part 205, a new speech recognition model is updated as an environmental adaptation speech recognition model, and it holds by the speech recognition model attaching part 205

[0053] In noise adaptation, as the method of environmental adaptation, the PMC method which creates an environmental adaptation speech recognition model from for example, a noise model and a speech recognition model can be used. In the case of microphone adaptation, the CMS method which creates an environmental adaptation speech recognition model can be used, for example using an average and speech recognition model of the voice for adaptation.

[0054] Moreover, in the case of speaker adaptation, the method of creating a speaker adaptation model using for example, a speaker adaptation model and a speech recognition model etc. can be used. Furthermore, when environmental information has been sent by not a model but voice, or the acoustic-analysis result, the method of modeling environmental information and being further adapted by the main part 200 side, is also possible. Moreover, all methods, such as the method and the EM study method of carrying out environmental adaptation using voice or an acoustic-analysis result, and the VFS speaker adaptation method, become possible as the environmental adaptation method directly. By creating the speech recognition model which carried out environmental adaptation, it becomes possible to raise a recognition performance.

[0055] In addition, it cannot be overemphasized that a speech recognition model can be created by the personal digital assistant 100 side, and this can be sent out and used to a main part 200, either.

[0056] At Step S409, in order to raise the communication efficiency of speech recognition, the 204 speech-communication information generation section performs environmental adaptation of the table which creates the speech information for communication. Here, it explains using the distribution of a speech recognition model by which environmental adaptation was carried out as a method of creating the scalar quantity child-sized table of each dimension of a parameter used for speech recognition. Although various methods can be considered to this method, the easiest method is the method of looking for maximum and the minimum value out of 3sigma of each whole dimension, and carrying out the division-into-equal-parts rate of the meantime.

[0057] Furthermore, in order to reduce quantum mark, all distributions are merged to one distribution, the maximum of the 3sigma (for example, range in which most samples which appear in Gaussian distribution are contained), and the minimum value are looked for, and there is also the method of carrying out the division-into-equal-parts rate of the meantime.

[0058] Or in accordance with the deviation of all distributions, how to assign a quantum point etc. can be considered still more precisely. It is bit for communication, without dropping a recognition performance on this method, in order to create the scalar quantity child-sized table of each dimension using the distribution of a speech recognition model by which environmental adaptation was carried out. It becomes possible to drop rate and efficient communication can be performed.

[0059] At Step S410, the created scalar quantity child-sized table is transmitted to a personal digital assistant 100.

[0060] At Step S411, the created scalar quantity child-sized table is received with a personal digital assistant 100, and it stores in the speech-communication information generation section 105.

[0061] The initialization mode is completed by the above. In addition, when two or more personal digital assistants 100 exist, a main part 200 can also save data, such as environmental information, and a speech recognition model or a quantization table, for every personal digital assistant.

[0062] Next, it shifts to speech recognition mode.

[0063] At Step S412, voice is inputted from the I/O section 101.

[0064] At Step S413, acoustic analysis of the inputted voice data is carried out in the acoustical-treatment section 103, and it sends to the speech-communication information generation section 105.

[0065] In the speech-communication information generation section 105, using a scalar quantity child-sized table, the acoustic-analysis result of voice data is formed into a scalar quantity child, and it agreement-izes as speech-communication information at Step S414. Furthermore, the encoded **** data are transmitted to a main part 200 through the communications control section 102.

[0066] At Step S415, in a main part 200, voice data which received is composite-sized, speech recognition processing is performed, and the recognition result is outputted by the speech recognition section 203. Under the present circumstances, in speech recognition processing, using the speech recognition model created previously cannot be overemphasized.

[0067] At Step S416, the result of speech recognition is interpreted with application 206, and it asks for the application

according to the result, and sends to the communications control section 202.

[0068] At Step S417, an application result is sent out to a personal digital assistant 100 through the communications control section 202 of a main part 200.

[0069] At Step S418, a personal digital assistant 100 receives an application result through the communications control section 102.

[0070] At Step S419, a personal digital assistant 100 outputs an application result from the I/O section 101. In case speech recognition is continued, it returns to Step S412.

[0071] Communication is ended at Step S420.

[0072] Thus, in the voice communication system of this operation gestalt, since the speech recognition model which was adapted for the environmental information of a personal digital assistant 100 performs speech recognition, optimal speech recognition can be performed corresponding to each personal digital assistant machine. Moreover, since communication conditions are set up based on environmental information, improvement in communication efficiency can be aimed at corresponding to each personal digital assistant machine.

[0073] In addition, although the method of asking for an average and distribution of the parameter of the noise section, sending it to a main part, and performing noise adaptation for a speech recognition model by the PMC method was illustrated with this operation gestalt in the case of noise, it cannot be overemphasized that the other noise adaptation methods can also be adopted. Moreover, although it asks for an average and distribution by the terminal side and being described by the method of transmitting, speech information can be sent, it can ask for an average and distribution by the main part side, and noise adaptation can also be performed.

[0074] Moreover, although the method of asking for an average and distribution of a certain suitable time of the parameter of the voice section, sending it to a main part, and performing microphone property adaptation for a speech recognition model by the CMS method was illustrated with this operation gestalt in the case of the microphone property, it cannot be overemphasized that the other microphone property adaptation methods can also be adopted. Moreover, although it asks for an average and distribution by the terminal side and being described by the method of transmitting, speech information can be sent, it can ask for an average and distribution by the main part side, and noise adaptation can also be performed.

[0075] Moreover, although the method of performing by the method of creating the phoneme model which expresses easy speaker nature in advance, sending it to a main part, and carrying out speaker adaptation of the speech recognition model was illustrated with this operation gestalt in the case of the speaker adaptation method, speech information can be sent and speaker adaptation can also be performed using voice by the main part side. Also in this case, it cannot be overemphasized that other various speaker adaptation methods can be adopted, either.

[0076] Moreover, with this operation gestalt, although noise adaptation, microphone adaptation, and speaker adaptation are described independently, it is also employable, combining these suitably.

[0077] Moreover, although [this operation gestalt] the initialization mode is performed in advance of speech recognition mode, once the initialization mode is completed, when resuming speech recognition in the same environment, it can also start from speech recognition mode suddenly. in this case, the thing for which a notice to that effect will be sent to a main part 200 side as compared with the environmental information created when memorizing previous environmental information to the personal digital assistant 100 side and resuming speech recognition if changeless -- or it can perform by making it judge by the main part 200 side based on the sent-out environmental information

[0078] Moreover, although environmental information is used for the both sides of speech recognition processing and the processing for improvement in communication efficiency with this operation gestalt, it cannot be overemphasized that only either may be performed by the environmental information concerned.

[0079] As mentioned above, being attained cannot be overemphasized by reading the program code with which the purpose of this invention supplied the storage (or record medium) which recorded the program code of the software which realizes the function of the operation gestalt mentioned above to a system or equipment, and the computer (or CPU and MPU) of the system or equipment was stored in the storage, although the gestalt of suitable operation of this invention was explained, and performing. In this case, the function of the operation gestalt which the program code itself read from the storage mentioned above will be realized, and the storage which memorized the program code will constitute this invention. Moreover, being contained when the function of the operation gestalt which performed a part or all of processing that the operating system (OS) which is working on a computer is actual, based on directions of the program code, and the function of the operation gestalt mentioned above by performing the program code which the computer read is not only realized, but was mentioned above by the processing is realized cannot be overemphasized.

[0080] Furthermore, being contained, when the function of the operation gestalt which performed a part or all of processing that CPU with which the expansion card and expansion unit are equipped is actual, and was mentioned above by the processing is realized based on directions of the program code, after the program code read from the storage is written in the memory with which the expansion unit connected to the expansion card inserted in the computer or the computer is equipped cannot be overemphasized.

[0081]

[Effect of the Invention] According to this invention, based on the situation about a voice input terminal machine, the optimal speech recognition or optimal communication can be attained as stated above.

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CLAIMS

[Claim(s)]

[Claim 1] The voice input terminal machine which is a voice input terminal machine which transmits voice data to a voice recognition unit through the communication network of a cable or radio, and is characterized by having an audio input means, a means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation, and the means of communications that transmits the information concerned to the aforementioned voice recognition unit.

[Claim 2] The voice input terminal machine according to claim 1 with which the aforementioned information is characterized by being the information based on any one on property [of the aforementioned voice input means], noise property, or speaker property ** at least.

[Claim 3] The voice input terminal machine according to claim 1 characterized by having a means to change the aforementioned voice data from the aforementioned voice recognition unit based on the conversion conditions concerned when the data-conversion conditions for the communication based on the aforementioned information are received.

[Claim 4] It is the voice input terminal machine according to claim 1 characterized by having a means to notify that to the aforementioned voice recognition unit when there is no change in the aforementioned information, a means to save the aforementioned information, a means to judge whether the aforementioned information had change at the time of each communication, and.

[Claim 5] It is the voice input terminal machine according to claim 1 which is equipped with a means to create a speech recognition model, based on the aforementioned information, and is characterized by the aforementioned means of communications transmitting the aforementioned information and/or the speech recognition model concerned to the aforementioned voice recognition unit.

[Claim 6] The voice recognition unit which is a voice recognition unit which performs speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of a cable or radio, and is characterized by having a means to perform speech recognition processing based on the information concerned when the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation is received from the aforementioned voice input terminal machine.

[Claim 7] The voice recognition unit which is a voice recognition unit which performs speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of a cable or radio, and is characterized by having a means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation, and a means to perform speech recognition processing based on the information concerned, based on the transmitted voice data.

[Claim 8] The voice recognition unit according to claim 6 or 7 characterized by having a means to create a speech recognition model based on the aforementioned information.

[Claim 9] The voice recognition unit which performs speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of the cable or radio characterized by providing the following. A means to determine the data-conversion conditions for communication based on the aforementioned information when the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation is received from the aforementioned voice input terminal machine. A means to send out the data-conversion conditions concerned to the aforementioned voice input terminal machine.

[Claim 10] The voice recognition unit which performs speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of the cable or radio characterized by providing the following. A means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation based on the transmitted voice data. A means to determine the data-conversion conditions for communication based on the aforementioned information, and a means to send out the data-conversion conditions concerned to the aforementioned voice input terminal machine.

[Claim 11] The voice recognition unit according to claim 9 or 10 characterized by the aforementioned data-conversion conditions including the data-conversion conditions based on the quantization table created based on the aforementioned information.

[Claim 12] A voice recognition unit given in the claims 6, 7, and 9 characterized by having a means to save the aforementioned information, for every aforementioned voice input terminal machine when the aforementioned voice input

terminal machine is plurality, or any 1 term of 10.

[Claim 13] The voice recognition unit according to claim 8 characterized by having a means to save the aforementioned speech recognition model, for every aforementioned voice input terminal machine when the aforementioned voice input terminal machine is plurality.

[Claim 14] The voice recognition unit according to claim 9 or 10 characterized by having a means to save the aforementioned data-conversion conditions, for every aforementioned voice input terminal machine when the aforementioned voice input terminal machine is plurality.

[Claim 15] The voice communication system which consists of a voice input terminal machine which can communicate, and a voice recognition unit through the communication network of the cable or radio characterized by providing the following. The aforementioned voice input terminal machine is a voice input means. A means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation. Means of communications which transmits the information concerned to the aforementioned voice recognition unit. ***** and the aforementioned voice recognition unit are a means to perform speech recognition processing based on the aforementioned information.

[Claim 16] It is the voice communication system characterized by having a means to be the voice communication system which consists of a voice input terminal machine which can communicate, and a voice recognition unit through the communication network of a cable or radio, and to perform speech recognition processing based on a means by which the aforementioned voice recognition unit creates the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation based on the voice data from the aforementioned voice input terminal machine, and the aforementioned information.

[Claim 17] The voice communication system which consists of a voice input terminal machine which can communicate, and a voice recognition unit through the communication network of the cable or radio characterized by providing the following. The aforementioned voice input terminal machine is a voice input means. A means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation. Means of communications which transmits the information concerned to the aforementioned voice recognition unit. ***** and the aforementioned voice recognition unit are a means to determine the data-conversion conditions for communication, and a means to transmit the data-conversion conditions concerned to the aforementioned voice input terminal machine, based on the aforementioned information.

[Claim 18] The voice communication system which consists of a voice input terminal machine which can communicate, and a voice recognition unit through the communication network of the cable or radio characterized by providing the following. The aforementioned voice recognition unit is a means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation, based on the voice data from the aforementioned voice input terminal machine. A means to determine the data-conversion conditions for communication based on the aforementioned information, and a means to transmit the data-conversion conditions concerned to the aforementioned voice input terminal machine.

[Claim 19] The speech-communication method which is the speech-communication method of transmitting voice data to a voice recognition unit from a voice input terminal machine, and is characterized by including the process which creates the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation, and the communication process which transmits the information concerned to the aforementioned voice recognition unit in the aforementioned voice input terminal machine through the communication network of a cable or radio.

[Claim 20] The speech-communication method which is the speech-communication method of performing speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of a cable or radio, and is characterized by including the process which performs speech recognition processing based on the information concerned when the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation is received from the aforementioned voice input terminal machine.

[Claim 21] The speech-communication method which is the speech-communication method of performing speech-recognition processing to the voice data transmitted from a voice-input terminal machine through the communication network of a cable or radio, and is characterized by to include the process which creates the information on the aforementioned voice-input terminal machine proper for speech recognition, or a use situation, and the process which performs speech-recognition processing based on the information concerned based on the data transmitted from the aforementioned voice-input terminal machine.

[Claim 22] The speech-communication method of performing speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of the cable or radio characterized by providing the following. The process which determines the data-conversion conditions for communication based on the information concerned when the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation is received from the aforementioned voice input terminal machine. The process which sends out the data-conversion conditions concerned to the aforementioned voice input terminal machine.

[Claim 23] The speech-communication method of performing speech recognition processing to the voice data transmitted from a voice input terminal machine through the communication network of the cable or radio characterized by providing the following. The process which creates the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation based on the data transmitted from the aforementioned voice input terminal machine. The process which determines the data-conversion conditions for communication based on the information concerned, and the

process which sends out the data-conversion conditions concerned to the aforementioned voice input terminal machine.

[Claim 24] The speech-communication method which is the speech-communication method between the voice-input terminal machines and the voice recognition units which can communicate, and is characterized by to include the process which performs speech-recognition processing based on the aforementioned information in the aforementioned voice recognition unit in the aforementioned voice-input terminal machine through the communication network of a cable or radio including the process which creates the information on the aforementioned voice-input terminal machine proper for speech recognition, or a use situation, and the communication process which transmit the information concerned to the aforementioned voice recognition unit.

[Claim 25] The speech-communication method which is the speech-communication method between the voice-input terminal machines and the voice recognition units which can communicate, and is characterized by to include the process which creates the information on the aforementioned voice-input terminal machine proper for speech recognition, or a use situation, and the process which performs speech-recognition processing based on the aforementioned information in the aforementioned voice recognition unit based on the voice data from the aforementioned voice-input terminal machine through the communication network of a cable or radio.

[Claim 26] Through the communication network of the cable or radio characterized by providing the following, it is the speech-communication method between the voice input terminal machines and voice recognition units which can communicate, and is the aforementioned voice input terminal machine. The process which creates the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation. The communication process which transmits the information concerned to the aforementioned voice recognition unit. The process which determines the data-conversion conditions for communication in ***** and the aforementioned voice recognition unit based on the aforementioned information. The process which transmits the data-conversion conditions concerned to the aforementioned voice input terminal machine.

[Claim 27] Through the communication network of the cable or radio characterized by providing the following, it is the speech-communication method between the voice input terminal machines and voice recognition units which can communicate, and is the aforementioned voice recognition unit. The process which creates the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation based on the voice data from the aforementioned voice input terminal machine. The process which determines the data-conversion conditions for communication based on the aforementioned information, and the process which transmits the data-conversion conditions concerned to the aforementioned voice input terminal machine.

[Claim 28] The storage which recorded the program which considers as a means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation for a computer, and the means of communications which transmits the information concerned to the aforementioned voice recognition unit, and is operated in order to transmit voice data to a voice recognition unit from a voice input terminal machine through the communication network of a cable or radio.

[Claim 29] The storage which recorded the program which considers as a means to perform speech recognition processing based on the information concerned, and is operated when the information on the aforementioned voice input terminal machine proper for speech recognition or a use situation is received for a computer from the aforementioned voice input terminal machine, in order to perform speech recognition processing about the voice data from a voice input terminal machine through the communication network of a cable or radio.

[Claim 30] The storage which recorded the program which considers as a means create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation based on the data transmitted from the aforementioned voice input terminal machine in the computer in order to perform speech recognition processing about the voice data from a voice input terminal machine through the communication network of a cable or radio, and a means perform speech recognition processing based on the information concerned, and is operated.

[Claim 31] The storage which recorded the program which considers as a means determine the data-conversion conditions for communication based on the information concerned, and a means send out the data-conversion conditions concerned to the aforementioned voice-input terminal machine, and operates when the information on the aforementioned voice-input terminal machine proper for speech recognition or a use situation is received from the aforementioned voice-input terminal machine for a computer, in order to perform speech-recognition processing about the voice data from a voice-input terminal machine through the communication network of a cable or radio.

[Claim 32] In order to perform speech recognition processing about the voice data from a voice input terminal machine through the communication network of a cable or radio A computer is based on the data transmitted from the aforementioned voice input terminal machine. The storage which recorded the program which considers as a means to create the information on the aforementioned voice input terminal machine proper for speech recognition, or a use situation, a means to determine the data-conversion conditions for communication based on the information concerned, and a means to send out the data-conversion conditions concerned to the aforementioned voice input terminal machine, and is operated.